

which are used by the *Herald* Office (with which Mr. Collins seems to be connected) to issue storm-warnings from the United States to Europe, no objection could be made against him. But Mr. Collins is more ambitious, and makes some assertions which run against the most authenticated facts known to meteorology, and others which may be true, but ought yet to be proved, while Mr. Collins, without any proof whatever, seems to consider them quite well established.

I must first object to the absence of distinction between the seasons, which is so important a feature in storms, especially in lower latitudes. Mr. Collins seems not to know that the West India hurricanes and other destructive tropical storms are frequent only at certain seasons. This is quite enough to dispose of the author's assertion "that the conditions which combine to develop nearly all areas of low pressure are of equatorial origin." The most violent storms of Europe and the United States happen in the colder months of the year, when there are no storms in the tropical belt north of the equator (very few exceptions are known); besides the use of the word "equatorial" must be objected to as, so far as I know, no cyclone has ever originated between 5° N.L. and 5° S.L., at least,<sup>1</sup> so that we may call the storms of the West Indies, the South Indian Ocean, about the Mascarenes, of the Bay of Bengal, &c., *tropical storms*—because they certainly originate in the tropical belt—but certainly not equatorial. So far as Europe is concerned, there are some few cases in which West India hurricanes have reached it, but this is confined to the months of July to October. At the same time of the year it is not impossible that cyclones originating in the tropical belt of the Pacific may strike the Pacific coast of the United States. As to the storms mentioned by Mr. Collins, which strike the west coast of Mexico, pass over the plateau, and thence into Southern Texas, I very much doubt their existence. In any case no storm of this kind has ever been followed on this route, and so Mr. Collins ought to be rather careful in speaking of them. So far as I know, from books published about Mexico, and from personal information, no storms are experienced on the Mexican plateau.

The same absolute want of facts and general improbability can be urged against the storms which Mr. Collins takes from the Asiatic continent to the Pacific and thence to the American continent. Here the distinction of the seasons is especially necessary, as all Eastern Asia is under the influence of monsoons or periodical winds.<sup>2</sup> In winter, when pressure is so enormously high in the interior of Eastern Siberia,<sup>3</sup> and the winds are north-west and north on the coast, that is, bring the cold dry air of the interior towards the Pacific Ocean, these conditions are favourable neither to local depressions nor to the propagation of European storms, which generally die out in Eastern Russia or Western Siberia. In summer the pressure is low in the interior of Asia, and air is constantly drawn from the Pacific Ocean to supply the deficiency towards the end of the rainy season or summer monsoon—in August to October is the time of the typhoons, that is, of the cyclones of the China Seas; but they do not originate on the Asiatic continent, and only strike it on a very limited area, that is, the coast of Southern China. These typhoons may perhaps reach California, as the West India hurricanes reach Europe, but it is not yet proved that this has ever been the case.

I admit that in autumn, that is, September and October, storms may perhaps pass from the Asiatic continent to the Pacific, and thence to America; but in latitudes far to the north of those visited by the typhoons. At Yakutsk, in North-East Siberia, the prevailing winds of that season are west and south-west, the amount of cloud great, and rains frequent, if not abundant, while the temperature is generally above freezing-point to the middle of October. I consider it possible that Atlantic (European) storms may, at this season, travel over the whole of Northern Siberia and reach the Pacific. In winter this is impossible, on account of the low temperature and high pressure then existing in Siberia.

I resume a few facts either well authenticated or very probable about storm-centres (cyclones) of the northern hemisphere.

1. By far the most of them originate in the middle latitudes (35°-65° N.) in Europe, North America, the Atlantic, and

<sup>1</sup> It would be too long to state why there are no equatorial cyclones. I would advise Mr. Collins to consult "*Etudes sur les Mouvements de l'Atmosphère*," by Guldberg and Mohn.

<sup>2</sup> See "Winds of the Globe," by Coffin.—Smithsonian Contrib. vol. xx.

<sup>3</sup> See Petermann's *Mittheilungen*, July, 1878, p. 259, and the short notice in NATURE, vol. xviii. p. 288.

Pacific. As to the three first-named regions it is abundantly proved by the observations we have already. As to the Pacific, we want the direct proof, because observations are too few. But nobody will doubt that, in conditions of climate so analogous to those of the Atlantic cyclones do also originate.

2. Cyclones are of much rarer occurrence in Asia, except the great summer depression, which is of a different nature, and remains the whole summer over the driest parts of the continent.

3. Tropical cyclones are confined to a few months of the year, and even these seldom reach the latitudes north of 35° N.

Lastly, a few words about Mr. Bennett's storm-warnings. I do not doubt that some storms may reach Europe from America. But it is not at all certain that every storm that has passed from the eastern coast of America should reach Europe. This is the first difficulty in storm-warnings from America. The other is, that neither the path the storm will take nor its rate of progress can be known with certainty. Every one who has examined European and American synoptical maps will have noticed how different the paths of the centres are. So long as the storm can be followed on land, by means of numerous stations, a great approximation to certainty in predicting it is possible, as the durations are caused by certain pre-existing states of pressure, temperature, humidity, &c. But how is this to be done on the ocean?

Meteorologists of great ability, especially Prof. Buys Ballot, have often advocated telegraph lines to the Azores and Iceland, so that these islands might serve as advanced guards to predict storms in Europe. At such a distance as they are from our continent they certainly could serve this purpose, as is clearly shown by the French *Atlas Météorologique* and Hoffmeyer's synoptical maps. As to American predictions for Europe, I must confess that most European meteorologists are very doubtful about it. It is to be noticed also that, as storms are very frequent in western Europe, and as the rate of progress of storm-centres over the Atlantic is not accurately known, there may be a seeming success in American predictions which the facts, when accurately known, would not justify.

This is not meant to cast a shade on the spirit of enterprise of Mr. Bennett in organising the *Herald* weather predictions. The observations thus collected, or saved from oblivion, will certainly be useful, even if it be proved that storm-warnings from America are not reliable.

A. WOEIKOF

St. Petersburg

#### A White Grouse

WHEN shooting, yesterday, on the moors near Dunrobin, I fired at an ordinary grouse and killed it; just as it fell, another bird rose that seemed to be a ptarmigan, from the complete whiteness of its plumage; a third bird then rose, and was shot. The three were picked up not far from each other, and were all very fine birds. It seemed strange that a ptarmigan should be so low; we were not very high above the sea, and far below the elevation affected by these birds. On examining it, it proved to be a very fine grouse, snowy white, with a few dark feathers in the tail and wings. It was not an albino; I think the eyes were dark. It is a very beautiful bird, has been sent off to Inverness to be stuffed, and will be preserved in the Dunrobin Museum.

No one here had seen a specimen of the white grouse before, and it excited considerable interest. No doubt it is only an accident, and its progeny, if it had any, would have been the ordinary grouse.

It may be less rare than I suppose, but you may deem its occurrence worthy notice in NATURE.

J. FAYRER

Dunrobin Castle, Sutherland, September 8

#### Brehm's "Thierleben"

IN last week's NATURE you have copied a drawing, "cobra charming," from Brehm's "Thierleben," presumably for its excellence. Permit me, however, to point out a most serious defect in its truthfulness—the relative proportions of the snakes to the charmers.

Take the youth blowing the horn to be 4 feet 6 inches in height (he could not be much less), the hoods of the cobras must be 8 to 9 inches across. Now I will venture to say that a hood of 4½ inches across has never yet been measured, in a live specimen at least.

I cannot now lay my hands on a cobra skin I have, and give

exact measurements, which I am sorry for, as the cobra in question measured 6 feet 3 inches in length, a size Col. R. Beddome—no mean authority—assured me is seldom or never surpassed.

In a work such as Dr. Brehm's, exaggerations in illustrations should be as carefully avoided as misstatements in letterpress. A Natural History that depicted horses the size of elephants would be scoffed at, yet, strange to say, equally glaring absurdities, such as "cobra charming," frequently pass muster.

Bath, September 10

E. H. PRINGLE

### The Sea-Serpent Explained

If you have space for the following, it is so confirmatory of Dr. Drew's experience of an opera-glass dispelling "fond deceits" concerning a sea-serpent, that it may be worth recording.

One morning in October, 1869, I was standing amid a small group of passengers on the deck of the ill-fated P. and O. ss. *Rangoon*, then steaming up the Straits of Malacca to Singapore. We were just within sight of the coast of Malacca, and quite out of sight, so far as I remember, of Sumatra. One of the party suddenly pointed out an object on the port bow, perhaps half a mile off, and drew from us the simultaneous exclamation of "The sea-serpent!" And there it was, to the naked eye, a genuine serpent, speeding through the sea, with its head raised on a slender curved neck, now almost buried in the water, and anon reared just above its surface. There was the mane, and there were the well-known undulating coils stretching yards behind.

But for an opera-glass, probably all our party on board the *Rangoon* would have been personal witnesses to the existence of a great sea-serpent, but, alas for romance! one glance through the lenses and the reptile was resolved into a bamboo, root upwards, anchored in some manner to the bottom—a "snag," in fact. Swayed up and down by the rapid current, a series of waves undulated beyond it, bearing on their crests dark-coloured weeds or grass that had been caught by the bamboo stem.

Ignorance of the shallowness of the straits so far from land, and of the swiftness of the current, no doubt led us to our first hasty conclusion, but the story, with Dr. Drew's, shows how prone the human mind is to accept the marvellous, and how careful we should be in forming judgments even on the evidence of our senses.

E. H. PRINGLE

Bath, September 10

DR. DREW'S letter in NATURE, vol. xviii. p. 489, recalls to my mind a similar phenomenon witnessed by myself and a friend on August 3, while crossing from Grimsby to Rotterdam. It was towards evening, when, looking ahead, we saw, about a mile distant, what appeared to be a long, low, black hull, without masts or funnel, moving through the water at enormous speed. After a minute or two it undulated and rose from the surface, and we saw that it was a flight of birds.

The deception was so complete that I can well believe that at least many of the stories of the sea-serpent have so originated, though I doubt whether all can be explained in this manner.

Grammar School, Bradford, September 7

C. BIRD

THE communication of Dr. Joseph Drew in your issue of yesterday regarding the serpentine appearance of a flock of shags in the English Channel is extremely interesting even as a mere fact regarding the habits of these birds. Will you kindly permit me, however, to point out that Dr. Drew's statement cannot be regarded as explanatory of the sea-serpent's personality? At the most the incident only explains one of a number of serpentine appearances of which porpoises and sunfishes swimming in line, pieces of wood with trains of sea-weed, &c., are also good examples. There have been placed on record numerous incidents of serpentine forms having been closely inspected (as in the well-known case of the *Dædulus*, or later still of H.M.S. *Osborne*) where the hypothesis of the serpentine appearances assumed by flocks of birds or fishes could not be held as explanatory in any sense. It is with the view of showing that the exact personality of the "sea-serpent" cannot be accounted for by such an incident as Dr. Drew relates, that I venture to pen these remarks; and as a firm believer from the standpoint of zoology that the large development of the marine ophidians of warm seas offers the true explanation of the "sea-serpent"

mystery, I would also ask your readers to distinguish carefully between cases in which serpentine appearances have been assumed by ordinary animals, and those in which one animal form has presented itself in the guise of the "great unknown." I am far from contending that a sea-snake developed in the ratio of a giant "cuttle-fish," presents the only solution of this interesting problem. A long tape-fish, or even a basking shark of huge dimensions, might do duty in the eyes of non-zoological observers for a "sea-serpent." The following cutting from the *Scotsman* of September 6, indeed, seems explicable only on the tape-fish theory which I have advocated with the persistence of firm belief within the past few years. At the same time zoologists cannot but feel indebted to Dr. Drew, and to those who, like that gentleman, note unwanted appearances in ordinary animal life, and communicate such incidents to your columns.

ANDREW WILSON

Edinburgh School of Medicine, September 6

The following is the extract alluded to:—

"A BABY SEA-SERPENT.—From Van Diemen's Land comes news of the capture of a queer fish. It is fourteen feet long, fifteen inches deep from the neck to the belly, tapering two inches to the tail, and eight inches in diameter in the thickest place. There are no scales, but the skin is like polished silver, with eighteen dark lines and rows of spots running from the head to the tail each side. There is a mane on the neck twenty inches long, and continues from the head to the tail; small head, no teeth, protrusive mouth, capable of being extended four inches like a sucker; eyes flat about the size of a half-crown, and like silver, with black pupils. There are two feelers under the chin, thirty-two inches long. The fish was alive when captured."

### Alpine Flowers

IN the Alps I have found some instances of different forms of flowers in plants of the same species, which, as far as I know, have been hitherto undescribed, and of which, therefore, I will give a short notice here.

*Geranium sylvaticum* is in one locality near the Albulia Pass gynodioecious, with large-flowered hermaphrodite, and small-flowered female stems. *Veratrum album*, *Dryas octopetala*, and *Geum reptans*, are in all the localities where I have examined them, androdioecious. *Astrantia minor* offers a quite peculiar sort of androdioecism, some stems bearing, as in other Umbelliferæ, in the same umbel hermaphrodite flowers and male ones, other-stems producing solely male flowers. *Dianthus superbus* seems at first sight to exist in three forms: (1) stems with hermaphrodite flowers, being perfectly proterandrous and producing a moderate quantity of whitish pollen; (2) stems with female flowers containing very conspicuous rudiments of stamens but pollenless anthers; (3) stems with pistils remaining imperfectly developed and with anthers containing abundance of a brown powder. At first sight I thought their flowers to be male, and the brown powder to be pollen grains, but under the microscope the latter proved to consist of grains, the diameter of which is only about one-eighth of that of the pollen grains of the hermaphrodite flowers. I suppose, therefore, these grains to be the spores of some species of fungus, and *Dianthus superbus* to be gynodioecious.

Berninahaus, August 29

HERMANN MÜLLER

### The Microphone

WHILE studying the relation between the battery power and the sounds heard through the microphone, I found, when the latter was included in the circuit between two pairs of elements, that the sound first amplified by the microphone underwent further amplification by the action of the second pair of elements, and when heard through the telephone the volume of sound was considerably augmented. This new fact may perhaps open up a fresh avenue of research and lead to further development of Prof. Hughes' beautiful discovery.

Hull

THOMAS ROWNEY

### A Meteor

WHILE directing a small telescope towards Jupiter, at 9.35 P.M. on the 2nd inst., my attention was attracted by the bright light of what proved to be a large meteor, falling towards the south-western horizon. Its apparent size was two or three times that